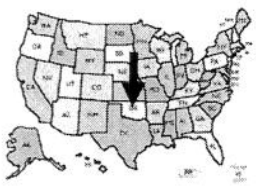
Good morning Mr. Chairman and Members of the Committee. Thank you for inviting me to appear before you. My name is Richard Hamilton and I am here representing my company, Ceres, as well as the Biotechnology Industry Organization where I am a member of the Board of Directors. The Biotechnology Industry Organization, (BIO), believes in the future of biofuels from all sources. Our nation's cornfields, soybean fields, forest lands and future fields of switch grass and other crops will all combine to help make America less dependent on foreign sources of oil. America's farmers have long been masters of feeding our great nation, and for the past quarter century helped build the ethanol and soydiesel industries that have assisted the United States in reducing its need for foreign oil. But, as agriculture has always answered the call to feed a growing population, BIO believes agriculture is also the key to further reducing our foreign petroleum needs by utilizing and expanding current and future sources of renewable energy Ceres is a plant genomics company which has taken the high-throughput technologies developed as part of the Human Genome Project and applied them to plants. We have several commercial interests, one of which is the development of dedicated energy crops such as switchgrass and Miscanthus to serve as cellulosic feedstocks that can be digested and fermented into biofuels such as ethanol and butanol.

As many of you already know most of the ethanol produced in the world today is produced from either sucrose or starch. However, most of the carbohydrate in a plant is in the form of cellulose and hemicellulose, which is found primarily in the leaves, stems, and stalks of plants. Because plants can generate much more cellulose per acre than starch or sucrose, cellulosic feedstocks have a much greater potential to make a significant contribution to our overall fuel supply. In fact if we could plant high yielding energy crops (15 ton/acre) on 34M acres of land (roughly the size of Oklahoma) we could generate the biofuel equivalent of 2.6 million barrels of oil per year, which in my example would make Oklahoma the third largest member of OPEC.

Turning Oklahoma into…

	Today	Tomorrow
Farm acres	34 Million	34 Million
Tons/acre	5	15
Gallons/ton	60	80
Thousand barrels/day	656	2,626



…a member of OPEC?!

	Thousand barrels/day
Saudi Arabia	9,400
Iran	3,900
Oklahoma	*2,626*
Kuwait	2,600
Venezuela	2,500
UAE	2,500
Nigeria	2,200
Iraq	1,700
Libya	1,650
Algeria	1,380
Indonesia	925
Qatar	800

I am not seriously suggesting that we convert all 34M acres of Oklahoma cropland to energy crop production nor that Oklahoma become a member of OPEC; I simply use it as

an example to show that cellulosic biofuels can make a very sizable contribution to our fuel supply.

One barrier to this future has been the historical difficulty to break down or digest cellulose in an economically attractive way. Enzymes, or cellulases, which catalyze the breakdown of cellulose, have been isolated from several different organisms, including fungi. Historically, the purification of enzyme from these sources has been prohibitively expensive, on the order of $5.50 per gallon of ethanol produced. Through research funded by the Department of Energy, genetic engineering or biotechnology has already played a key enabling role in the development of cellulosic biomass conversion technologies by dramatically reducing the cost of cellulase production from about $5.50 per gallon of ethanol to $0.10-15 per gallon of ethanol. Future biotechnology-based developments in cellulose processing technology will likely include:

- Improved cellulase and hemicellulase production economics via microbe or plant-based production systems
- Improved fermentation strains that efficiently utilize both hemicellulose (C5) and cellulosic (C6) sugars
- Consolidated bioprocessing microbes which combine the ability to break down cellulosic materials with the ability to efficiently ferment various sugars to ethanol and other biofuels.

To achieve the full potential of cellulosic biorefining technologies, improved feedstocks should be developed to maximize the amount of fuel that can be generated from each acre of land. While many people have suggested that agricultural residues and forest thinnings will be used to supply cellulosic biorefineries, I would like to suggest that high yield density energy crops, will in many geographies be a superior choice of feedstock.

What is Ceres doing to develop dedicated energy crops? We are taking technologies such as high-throughput DNA sequencing and microarray technologies that were developed for deciphering the human genome and applying them to plants. During the past eight years we have discovered and characterized more plant genes (over 70,000) than in the whole of human history. We are using this proprietary knowledge to develop energy crops in several ways:

- Marker-assisted breeding – the use of genomics to generate DNA markers associated with specific plant phenotypes;
- Precision-breeding – the use of recombinant DNA technology to reintroduce plant genes into a plant under different regulation;
- Transgenesis – the ability to transfer genes between plant species.

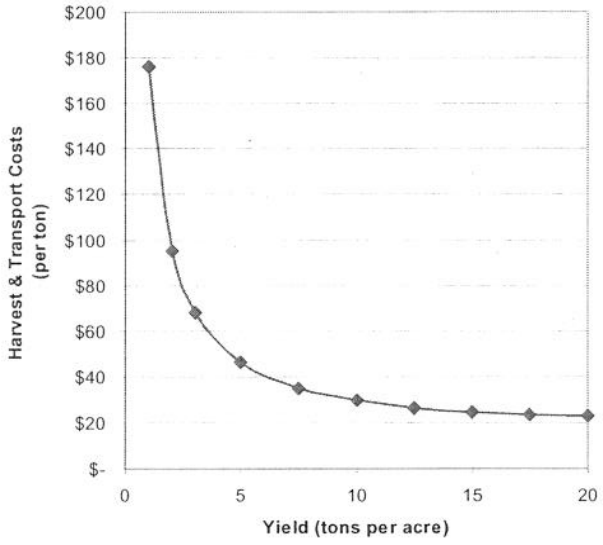
Recently, we entered into a long-term collaboration with the Noble Foundation of Ardmore, Oklahoma, the world's premier research institute for perennial grasses such as switchgrass. By combining our leading genomics capabilities with the Noble Foundation's breeding and agronomic expertise, we will significantly accelerate the development of high yielding, low input, optimized energy crops. Working together we

are currently field testing varieties of switchgrass in 12 different locations in 8 states. We are scaling up the production of some of our leading varieties and anticipate having our initial varieties ready for commercialization in the next few years as commercial scale cellulosic biorefineries become operational. We also have collaborations with the USDA for sequencing switchgrass genes and with the National Renewable Energy Labs for the compositional analysis of energy crops.

What kinds of traits are we developing to improve the characteristics of energy crops such as switchgrass? There are several important characteristics that will improve the economic competitiveness of energy crops as a feedstock for biofuel. However, if there is one thought I would like to communicate to you today it is the importance of yield density.

Yield Density

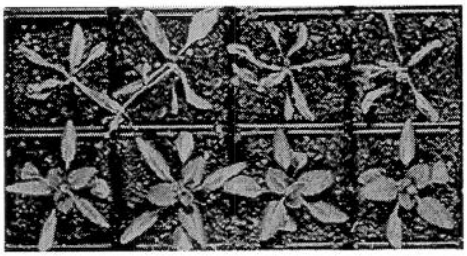
High biomass yield density (tons per acre) is the single most important characteristic a biofuel feedstock can have. Feedstock cost (at the refinery gate) is the single largest cost element in biofuel production and harvesting and transportation costs are the single largest component of feedstock cost. Imagine a 10,000 ton per day biorefinery using a 2 ton per acre agricultural residue as a feedstock. It would require a 5,000 acre per day "footprint" which would expand every day. The cost of transporting low density biomass to the biorefinery quickly becomes prohibitively expensive.



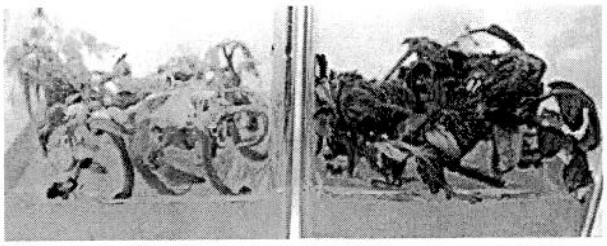
At Ceres we are using genomics to impact yield density by altering plant physiology, plant architecture, and photosynthetic efficiency. Preliminary results indicate that we can achieve biomass yield increases of >300 percent in some grass species, making the goal of a 15-20 ton per acre feedstock (compared to 4-7 tons currently) well within the realm of feasibility. This means that the radius of cropland needed to supply a cellulosic biofuel refinery could be reduced by as much as 90%.

Expanding Usable Acreage

Another important energy crop characteristic is its ability to grow on a wide variety of geographies. Expanding the amount of usable acreage by being able to grow energy crops on land that is too dry, or with poor soil characteristics, can increase the scale of biofuels production without competing for food production acres. At Ceres we are using genomics to develop drought, heat, cold and salt tolerant plants, as well as plants that can thrive on a variety of different soil conditions.



Drought tolerance



Heat tolerance

Low Agronomic Inputs

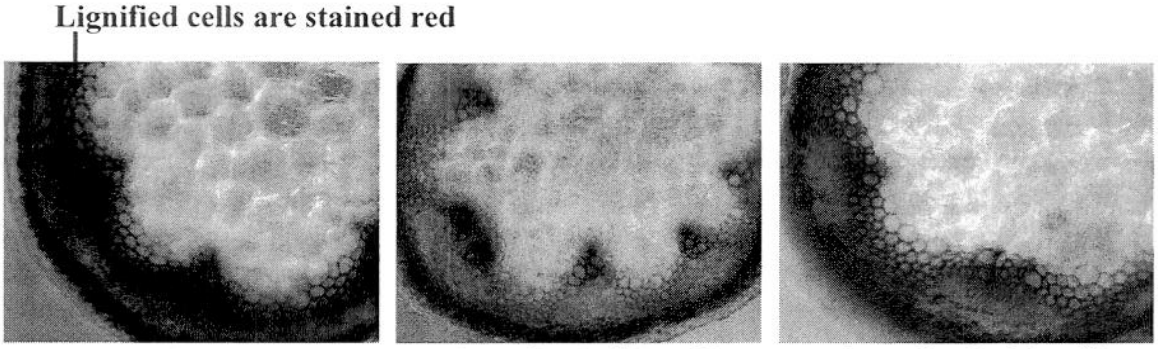
A third characteristic energy crops must have is low agronomic inputs. In order to increase the net energy per acre created, one must limit the energy inputs that go into growing a biomass crop. At Ceres we are developing traits which enable crops to take up and utilize nutrients more efficiently, thus enabling them to be grown with less fertilizer.

Improved Energy Content

Different plants vary in their relative content of cellulose and hemi-cellulose material. For the purpose of a biomass feedstock plant, a higher level of cellulose and hemi-cellulose content would give a greater fermentation yield or more gallons of biofuel per ton of biomass. Ceres is pursuing a variety of approaches to increase the carbohydrate content of various energy crop species.

Improved Processing Characteristics

The recalcitrance of cellulosic biomass to digestion and fermentation remains a significant obstacle to the large scale adoption of cellulosic biorefineries. Designing a feedstock plant with improved processing characteristics such as decreased lignin levels would result in an improvement in the overall economics for cellulosic biorefining. At Ceres we have already isolated every gene in the lignin biosynthesis pathway and are manipulating them to generate optimal processing characteristics.



How might public policy support the development of a domestic cellulosic biofuel industry?

I have a few suggestions:

1. Support programs for the construction of commercial cellulosic biorefineries. It is imperative that we get the first few commercial biorefineries built as quickly as possible so that we can begin riding the learning curve associated with operating them.
2. Establish pilot programs to encourage farmers to plant small acreages of energy crops so that the yield potential for various geographies can be established and biorefineries attracted to those geographies.
3. Consider extending programs like crop insurance and other farmer protection programs to dedicated energy crops.
4. Support programs at the USDA to establish agronomic best practices for the planting, harvesting and storage of dedicated energy crops.

In summary, high yielding energy crops have the potential to provide a significant fraction of our domestic transportation fuel supply while reducing carbon dioxide emissions, increasing farm income and stimulating rural economies. How quickly this future is realized will depend on federal policy that can either slow down or speed up our transition to a more secure energy future. This concludes my remarks, thank you for your time and attention.

Richard W. Hamilton, Ph.D.

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Summary:

Experienced senior executive with an extensive track record in the biotechnology industry. Combination of a high-level technical background with operational, financial and managerial experience. Strong presentation and interpersonal communication skills. Demonstrated record of success in both academia and business.

Experience:

2002-present **Ceres, Inc** **Thousand Oaks, CA**
President & CEO

Ceres is a leading plant genomics company with over $135M in committed partnership revenues. The company has development activities in the food, feed, fiber, energy, nutrition and pharmaceutical industries. See www.ceres.net for additional details.

1998-2002 **Ceres, Inc** **Thousand Oaks, CA**
Chief Financial Officer

Responsible for raising over $100M in equity from private equity investors and corporate partners

1996-1998 **Oxford Bioscience Partners** **Costa Mesa, CA**
Principal

Oxford is one of the leading venture capital firms in the world focused on biotechnology investments.

1994-1996 **The Medica Fund** **Boston/Tel Aviv**
Associate

Medica is a MVP-related fund dedicated to investing in health care opportunities in Israel.

1993-1996 **MVP Ventures** **Boston, MA**
Associate

MVP is a Boston-based partnership with $135M under management. Areas of investment include life sciences, information technology and business expansion. Responsibilities included sourcing and evaluating investment opportunities in life sciences companies.

1990-1992 **Harvard Medical School** **Boston, MA**
Research Fellow

Conducted research in developmental genetics to elucidate the temporal and spatial mechanisms governing gene expression in murine embryos.

Education:

1990 **Vanderbilt University** **Nashville, TN**
Ph.D. in Molecular Biology

1984 **St. Lawrence University** **Canton, NY**
B.S. in Biology

Other Completed course work for Masters Degree in Management of Technology while at Vanderbilt.

Awards and Honors:

Vice-Chairman, Biotechnology Industry Organization (BIO)
Chairman, Food and Agriculture Governing Board, BIO
Howard Hughes Research Fellow
Harold Sterling Vanderbilt Scholar
Vanderbilt University Scholar
New York State Regents Scholarship

Committee on Agriculture
U.S. House of Representatives
Required Witness Disclosure Form

House Rules* require nongovernmental witnesses to disclose the amount and source of Federal grants received since October 1, 2004.

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Organization you represent (if any): Ceres, Inc.

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1. **Please list any federal grants or contracts (including subgrants and subcontracts) you have received since October 1, 2004, as well as the source and the amount of each grant or contract. House Rules do NOT require disclosure of federal payments to individuals, such as Social Security or Medicare benefits, farm program payments, or assistance to agricultural producers:**

Source: _____ **Amount:** _____

Source: _____ **Amount:** _____

2. **If you are appearing on behalf of an organization, please list any federal grants or contracts (including subgrants and subcontracts) the organization has received since October 1, 2004, as well as the source and the amount of each grant or contract:**

Source: Department of Energy, Office of Science **Amount:** $1,379,046
Funds received as of 6/26/06: $155,498.00

Source: _____ **Amount:** _____

Please check here if this form is NOT applicable to you: _____

Signature: _____

* Rule XI, clause 2(g)(4) of the U.S. House of Representatives provides: *Each committee shall, to the greatest extent practicable, require witnessess who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof. In the case of a witness appearing in a nongovernmental capacity, a written statement of proposed testimony shall include a curriculum vitae and a disclosure of the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by the witness or by any entity represented by the witness.*

PLEASE ATTACH DISCLOSURE FORM TO EACH COPY OF TESTIMONY.